

World-class R&D and Alliances Sharpening the Cutting Edge

In 2004, the world's eighth largest non-volatile memory maker, Macronix, made breakthroughs in Flash memory and Mask ROM, and strengthened its strategic alliance with IBM.

Accelerate and Intensify R&D

Macronix is one of the few companies that design, manufacture, and market non-volatile memory products at the same time. We are also the only Taiwan semiconductor company that has silicon intellectual property, patents, product design and development, process shrink capability, 6-inch and 8-inch wafer fabs, and own-brand global marketing.

Technology is the foundation for all hi-tech companies. With a strong emphasis on R&D management, Macronix invests over 13% of its revenues in R&D expenditures, which has allowed us to master advanced technology for Mask ROM, Flash, and all types of Logic ICs. According to statistics from an authorized survey by the Web-Feet Research





organization, in 2003 Macronix was the eighth largest producer of non-volatile memory, the number one largest producer of Mask ROM, and the sixth largest producer of NOR-Flash in the world. In addition, the company is one of the few manufacturers in the world that can provide both Mask ROM and Flash at the same time.

Since its founding, Macronix has positioned itself as a world-class semiconductor company. The intensely competitive semiconductor industry has been a difficult challenge. When Macronix began 15 years ago, there were 15 Japanese memory companies; today only three remain. Without substantial competitive advantages, there is no way to survive. Future competition will only become more severe, so how will Macronix respond?





Tom Yiu, Senior Vice President People have to believe that their work has meaning and that what they do will be successful. This is how they find the satisfaction and boundless motivation to go forward.

To remain healthy in the field of hi-tech, a company must develop both external and internal strength. Mastering basic key technologies is an internal strength; applications and manufacturing are external strengths. Over the past two years Macronix has continued to master key technologies, yet more important has been our enhancing of external strengths, such as developing more effective commercialization of technology, accelerating product transition and improving technology and service.





C.Y. Liu, Senior Vice President I am a pessimistic optimist. For overall direction I maintain a conservative and steady position. But when I get started, I forge ahead and tackle every task with optimism. My wish is to meet every day with excitement.

Flash Shifts to Advanced Processes

In 2004 Macronix began officially producing NBit technology with 100,000 erase/write cycles, which has been in development since 1999. The 100,000 cycles mark is a milestone since this is the specification for Flash memory. Flash production has shifted to advanced process technology, cutting production costs dramatically, and revenues have climbed 75.6% since 2003. 8-inch wafer production has already made a full conversion to 0.15 micron Floating Gate and 0.25 micron NBit processes. Advanced process technology products, 0.25 micron NBit, 0.15 micron and 0.18 micron and above, have increased revenue share by 53%. In 2005 Macronix will commence mass production of a Flash product line that uses 0.13 micron NBit technology. This will increase Macronix's market share in the realm of rapidly growing Flash applications.

Breakthroughs have also occurred in Mask ROMs. Traditionally, masking methods were used to design integrated chips. Now, using new NBit technology that has evolved from Flash technology, electronic methods are used for programming, which is a major advance.

Last year Macronix made significant improvements to production lines. The 6-inch fab underwent a strategic conversion to high pressure CMOS production. All Mask ROM and Flash products are now manufactured at the 8-inch fab. To balance production capability each product line utilizes half of the 8-inch fab. For Macronix, the breakthroughs of 2004 have laid a foundation for future growth.



Ray Mak, Vice President It's important in life to develop and utilize your talents and not just worry about material gains. As Kennedy said, "Ask not what your country can do for you – ask what you can do for your country."

On Track with Technology

The long-term outlook for technology, resources, and business at Macronix is to ally and cooperate with leading world technology enterprises. Macronix has a strategic alliance with IBM to develop revolutionary new non-volatile memory technology for PC RAM. Currently this material is also acknowledged to hold the most potential for new Flash components. Macronix has made a large R&D investment and looks forward to gaining a technology advantage.

Integrating telecommunications with multimedia applications for digital consumer electronics is the next emerging giant for the electronics industry. 2005 will be a year for consumer electronics, with future 3C technology integration already a trend. The key to the digital consumer electronics era will be how to obtain integrated chips with the lowest cost process technology. The winner will be whoever can provide complete and rapid solutions for these products.

Upon its founding, Macronix chose System-on-Chip as its long-term enterprise objective. Macronix is also devoted to accumulating logic technology for multimedia applications, and has established a components bank for video, audio, network, system and logic technologies. It has found successful application for audio visual and computer peripheral equipment targeted for 3C multimedia applications, and the development of internet and information appliances.

Facing the trends of the digital consumer electronics era, Macronix's overall direction in product development is making large strides towards digital video, wireless communications, and high speed networking. Moreover, depending on varying technology and requirements of different customers, Macronix offers the best system integration and solutions with "Innovation, Quality, Effectiveness, Service" as goals. Our guide is the pursuit of total customer satisfaction, and our outbok improves daily while meeting the new century's challenges.